ably be necessary to establish supply stations at intervals along the road to be maintained with this equipment.

Underground Pipe Construction in Streets: C. E. BOLLING, Richmond, Va.

Much money could be saved in street construction and maintenance if pipe systems, such as for water, gas, sewer, etc., were laid before the surface of the roadway was constructed. All main pipes should be placed and connecting pipes laid to each lot, whether the latter are occupied or vacant. The estimated annual cost on such connections, assuming a 4 per cent. interest on the outlay, is 96 cents. The rapid rate of growth of communities so improved is marked. The increased value of abutting property, due to the conveniences obtained, creates tax receipts generally in excess of this annual interest. The cost of making pipe connections through improved roadways is at least 60 per cent. greater than through unimproved ones, and the cost of restoring and maintaining the pavement is doubled.

Impact Testing Machine for Pitch: W. H. FULWEILER, Philadelphia.

This apparatus was designed to determine the relative binding qualities of bituminous materials used in road construction and maintenance. The material to be tested is enclosed as a thin film between two steel dies. The dies are designed to avoid the effect of suction. An excessive breaking load is applied by the impact of a falling weight, and the resistance to rupture of the film is recorded by a spring balance provided with a maximum indication hand. This form of apparatus may be used to compare the binding qualities of any grade of material. In a modification of this apparatus a pendulum in falling separates the dies, and automatically records the energy absorbed. The results obtained have not yet been completely analyzed, but apparently they will serve to differentiate classes of materials and indicate the most effective viscosity of any material for road use.

Centrifugal Method for the Determination of Free Carbon: W. H. FULWEILER.

This method was designed to afford rapid and reasonably accurate results to obviate the danger of handling carbon bisulphide in the laboratory. The material is weighed with a stoppered Goez phosphorus tube dissolved in CS_2 with shaking and centrifuged until the precipitate ceases to contract. The percentage may then be read off directly. The tubes are calibrated for the particular class of material to be tested by reference to standard samples. Care must be taken to keep the tubes scrupulously clean. The lower the percentage of free carbon the closer this method checks with the ordinary gravimetric method. In this method the carbon bisulphide is not exposed to the air and considerably smaller quantities are required.

Cost of Road Building with Convict Labor: J. H. PRATT, Chapel Hill, N. C.

The author has not submitted abstract.

The following papers in this group were read by title in the absence of authors and manuscripts:

Street Asphalt Paving Mixtures, and Value of Blown Asphalts and their Manipulation: H. B. PULLAR, Chicago.

Organization of the Engineering Department of Coleman du Pont Road, Inc.: F. M. WILLIAMS, Delaware.

Organization of Convict Labor on the Virginia State Highways: P. ST. J. WILSON, Richmond, Va.

Some Limitations of Distributing Machines: H. B. DROWNE, Columbia University

Voids in the Aggregates of Bituminous Concrete Pavements: A. H. BLANCHARD, E. R. DONLE and C. M. HATHAWAY, Columbia University.

It is expected that the papers of this group will be published in book form at an early date.

G. W. BISSELL,
Secretary

SOCIETIES AND ACADEMIES

THE HELMINTHOLOGICAL SOCIETY OF WASHINGTON

THE seventh regular meeting of the society was held at Dr. Ransom's residence on December 19, 1911, Dr. Ransom acting as host and Mr. Crawley as chairman.

Dr. Pfender presented a brief note on the desirability of zoologists and medical men using *Treponema* rather than *Spirochæta* for the organism causing syphilis.

Mr. Foster presented the following note:

Analysis of the Results of 87 Fecal Examinations of Sheep Dogs for Evidences of Parasitism.

Order No. 176 of the Bureau of Animal Industry requires that all collie or sheep dogs imported to this country shall be held in quarantine pending the result of a fecal examination to determine the presence or absence of the gid tapeworm. As it is difficult to distinguish the eggs of the gid tapeworm from those of other less injurious species, all dogs found infested with tapeworms are given a suitable tæniafuge.

Since November 25, 1910, when this order went

into effect, the feces of 87 dogs have been examined. Of these, 50 dogs, or about 57 per cent., were infested with parasitic worms. Of the 50 dogs thus parasitized, 28 were infested with nematodes only, while 22, or about one fourth of the dogs examined, were infested with tapeworms, either of one species only, of two or more species, or of tapeworms and nematodes.

Of the 22 dogs infested with tapeworms, there were

7 infestations with *Tænia hydatigena,*
8 infestations with *Tænia pisiformis,*
4 infestations with *Dipylidium caninum,*
2 infestations with *Multiceps serialis,*
8 infestations with unidentified *Tænia.*

This is a total of 29 infestations with tapeworms, representing four recognized species. The number of infestations is of course greater than the number of dogs infested, since in several cases one dog proved to be the host of two or more species.

The heaviest infestation recorded, from 14 to 19 specimens of tapeworms, representing three species, was as follows:

	Specimens
Tænia hydatigena	6
Tænia pisiformis	3
Dipylidium caninum	5–10

It will be seen from the foregoing that *T. hydatigena* is the tapeworm which was most frequently found. Out of 37 identified specimens, this species occurred 13 times, 35 per cent. of the specimens identified being of this species. *D. caninum,* although found in but 4 infestations, comes next in number of specimens found, *i. e.,* 12. There were 8 infestations with *T. pisiformis,* with a total of 10 specimens, while only 2 specimens of *M. serialis* were found and in both cases the identification is uncertain.

Of the 87 dogs examined,

9.2% were infested with unidentified tapeworms,
9.2% were infested with *Tænia pisiformis,*
8.1% were infested with *Tænia hydatigena,*
4.5% were infested with *Dipylidium caninum,*
2.3% were infested with *Multiceps serialis.*

It is interesting to note what a small per cent. were infested with *D. caninum,* which is usually considered the commonest dog tapeworm. In all the species considered in this paper, the percentage of infestation is far lower than the average given in the comparative table of Stiles, 1898 ("Inspection of Meat for Animal Parasites," p. 105). The writer is inclined to think that the small percentage shown in the examination of imported dogs is the result of the greater care bestowed on valuable animals such as these are.

Mr. Leonard read a paper entitled "Some Abstracts from Investigations on Parasitic Diseases Carried on at the Marine Hospital, Wilmington, N. C." The paper showed the percentage of infection of man with various intestinal parasites as determined by 688 microscopic examinations.

Mr. Hall presented the following note:

Notes on the Parasite Fauna of Colorado.

The writer has recently compiled a list of the parasites of animals in the state of Colorado, the list covering published records, material in the collections of the Bureau of Animal Industry, the National Museum, the Hygienic Laboratory, the Naval Medical School, and some records furnished by workers in various colleges. Most of the Bureau of Animal Industry specimens from Colorado were collected by the writer during the past summer.

Using the word *identified* to indicate at least a generic identification, the list includes at present a total of 251 identified and 27 unidentified species of protozoan, trematode, cestode, nematode, crustacean, mallophagan, hemipterous, dipterous, siphonapteran, arachnid and annelid parasites.

Among the interesting and apparently new species collected by the writer during 1911 may be mentioned a *Rictularia* and a *Tænia* resembling *T. pisiformis* from *Canis nebracensis,* and a *Chabertia* from *Thomomys fossor.*

One case of hookworm found by Dr. Webb, of Colorado Springs, in a patient from the south is of interest in that it suggests that with carriers of hookworms entering the state, the disease is likely to get a foothold, especially in southern Colorado. In fact, it is likely that an examination of the Mexican miners in southern Colorado, where the climate and the mode of life in the Mexican section of some mining towns is favorable to hookworm development, would be repaid by positive findings.

The collection of a species of *Anopheles* by G. P. Weldon in Delta County is of interest, as this is the first record of this genus from Colorado, according to Professor Gillette, who furnished the writer with the record. In his opinion, we have here the explanation of an outbreak of malaria on the western slope of Colorado.

The occurrence of what Stiles calls *Dermacentor andersoni* and Banks calls *D. venustus* has been reported from ten counties in Colorado by Hunter and Bishopp (1911). It was first reported from Colorado by Banks (1895), under the name of

Dermacentor americanus. As the carrier of Rocky Mountain spotted fever, this tick is of especial interest at present.

Dr. Ransom presented some figures illustrating the life history of *Habronema muscæ* and showing stages in the fly and in the horse. A note on this life history has already been published in SCIENCE.

Dr. Ransom presented the following note:

The Occurrence of Cheilospirura hamulosa in the United States.

The nematode *Cheilospirura hamulosa* is parasitic in the gizzard of the chicken. A record of the occurrence of this species in the United States has apparently not been published heretofore. The helminthological collection of the Bureau of Animal Industry contains specimens collected in Kansas in 1897, identified by Stiles and Hassall; in New Jersey in 1903, identified by Ransom; in Hawaii in 1907, identified by Hall and Hassall; in the District of Columbia in 1908 and 1909, identified by Hall; in Ohio in 1911, identified by Graybill, and in Indiana in 1911, identified by Ransom.

Dr. Pfender presented the following note:

Symptoms Accompanying an Infection with Tænia saginata.

Recently one of the writer's patients, a woman 54 years old, presented herself for treatment and complained of the following symptoms: itching all over the body, skin eruptions, recent trouble with cold feet, twitching of lower limbs, nausea, no desire for food, excessive bloating, flatus, occasional dizziness and excessive leucorrhea. She complained that pieces of worm, from 3 to 30 at a time, were being constantly passed. On treatment with oleoresin of male fern the worm was passed. Since then the nervous and digestive symptoms have entirely disappeared and the general health is improving.

THE eighth regular meeting of the society was held in the rooms of the Zoology Division of the Marine Hospital Service, January 11, 1912, Dr. Stiles acting as host and Mr. Foster as chairman.

Dr. Garrison exhibited a specimen of pancreas sent in by Assistant Surgeon Kerr, U:S.N., from Guam. The pancreas had a specimen of *Ascaris lumbricoides* in the duct of Wirsung, extending from the intestinal termination of the duct clear across the pancreas, the head being near the periphery. He also showed two appendices, containing 2 and 3 specimens of the same worm, sent in by Dr. Kerr from the same place.

Dr. Ransom presented pictures of a worm sent in by Dr. Darling from the Canal Zone and said to have been collected from the urine of man. The worm is a specimen of *Mononchus,* a free-living genus, and the case is therefore one of pseudo-parasitism. The tooth in the buccal capsule would suggest a true parasite to most observers.

Dr. Ransom noted that numerous cases of *Cysticercus bovis* had recently been detected in abattoir inspection, 15 cases having been found in two days at Omaha. The parasite has also been rather common at Chicago, Kansas City, Milwaukee, Buffalo, etc. Up to a year ago, more specimens of *Cysticercus cellulosæ* had been found than of *C. bovis,* due probably to the fact that the former were more carefully looked for.

Dr. Stiles noted that Dr. Francis had recently sent him several cases of *C. cellulosæ* from Texas with the statement that this parasite was not uncommon in Texas.

Dr. Stiles presented a note on the preliminary survey of Texas for hookworm. He spent one month there, working at the state university, the normal school and the schools for the blind and the deaf and dumb, and in the open country. He demonstrated hookworm by microscopic findings in 45 counties and saw undoubted physical cases in another county. The disease occurs chiefly in the eastern portion of the state, and is probably unimportant in the northwest portion. In the rural eastern part, some places show about one third of the people infected. There are some severe cases, but none as bad as the worst cases in Alabama and Mississippi. A preliminary survey of the coal-mining part of West Virginia was interrupted after the hookworm had been microscopically determined in nine localities.

The rest of the evening was devoted to a talk by Dr. Stiles on "Foreign Parasitologists and Their Work."

THE ninth regular meeting of the society was held in the rooms of the Zoology Division of the Marine Hospital Service, 25th and E Streets, N.W., February 16, 1912, the president, Dr. Stiles, acting as host and chairman.

Dr. Stiles presented a number of generic names of parasites of man for consideration by the society. The society agreed to recommend to the International Committee on Nomenclature and to the Committee on Medical Zoology for adoption according to the plan agreed upon at the last Zoological Convention at Gratz, the following names:

Cestoda: *Davainea, Diplogonoporus, Dipylidium, Echinococcus, Tænia.*

Nematoda: *Ancylostoma, Ascaris, Dracunculus, Gnathostoma, Necator, Strongyloides, Trichostrongylus.*

Acanthocephala: *Gigantorhynchus.*

Gordiacea: *Gordius, Paragordius.*

Dr. Stiles presented a report on the work of the Rockefeller Hookworm Commission, and in this connection noted the compilation of the nomenclature used throughout the world in connection with hookworm disease. He also noted that the name *Necator africanus* given by Looss to a hookworm from the chimpanzee was preoccupied and that he had written to Looss asking him to change it.

Dr. Stiles also presented the outline of a symposium on amebiasis, which is to be part of the program at the coming International Congress of Hygiene and Demography.

Mr. Hall presented the following note:

A Second Case of Multiceps multiceps in the Coyote.

At the meeting of the society in April, 1911, the writer presented a note on a case of *Multiceps multiceps* in the coyote, *Canis nebracensis.* This was a case of infection by artificial feeding with *cœnurus,* the coyote dying six days later of septicæmia. Fifty-two heads of *M. multiceps* were recovered from the intestine. I wish to record a similar case from a coyote in the same litter, fed at the same time. Death occurred 14 days after feeding, and in the writer's absence the postmortem was made by Dr. Graybill, who found 4 heads of *M. multiceps* in the intestine. A comparison of these heads with the 52 recovered from the first coyote shows that apparently they had not developed any more in 14 days than in 6 days. In this connection may be mentioned a note presented before the society at the meeting in January, 1911, in which a case was noted where a dog fed *cœnurus* 82 days previously was found on postmortem to have 5 tapeworms, the largest having eggs with undeveloped onchospheres and the smallest being less than one half inch in length.

These data indicate that this worm may at times develop very slowly. Leuckart (1886) has noted that of three dogs fed *Cœnurus,* one was found to have over 100 completely developed tapeworms in about ten days; another had only heads of tapeworms after three weeks, with bands of segments an inch long attached to them in a few cases only, while the third failed to develop any tapeworms.

The remainder of the evening was devoted to a discussion of the nomenclature of parasitic diseases.

Maurice C. Hall,
Secretary

THE ACADEMY OF SCIENCE OF ST. LOUIS

The meeting of the Academy of Science of St. Louis was held at the Academy Building, Monday, February 19, 1912, at 8 P.M., President Engler in the chair.

Dr. Charles H. Turner presented a paper on "Experimental Study of Color Vision and Pattern Vision of Bees." The conclusion reached by experiments was that bees can distinguish, not only between colors, but also between color-patterns, and that this behavior is of value to them in recognizing plants that contain an abundant supply of honey. Hence, since bees can distinguish colors and the fine details of color-pattern, there is nothing about the visual powers of bees that militates against the theory that the colors and the color-patterns of flowers are adaptations to insect visitors. The bees respond to these colors, not because they prefer one color to another; but, because, under certain conditions the color or color-pattern selected has acquired a utilitarian meaning—has come to be the sign of something worth a response.

Although Plateau's conclusions do not harmonize with the above statement, yet the actual facts observed by him are in perfect accord.

Dr. H. M. Welpley spoke on "Miniature Indian Baskets" and exhibited two specimens made by the Pomo Indians which were viewed by means of simple microscopes. The foundation of the baskets is from the white leaf willow (*Salix argyrophylla*) and is sewed with California sedge (*Carex barbaræ*). The baskets are made in pattern black and white, the black being from the root of the California sedge. The larger basket is .18 × .10 inch, with the opening .06 inch across, and weighs one fourth grain. The smaller basket is .10 × .04 inch, with an opening .04 of an inch across, and weighs one twentieth grain. Both baskets are woven in the same manner as large baskets and carefully patterned. The Pomo Indians, located in northern central California, are noted for their basketry, which is unrivaled in North America, for workmanship, beauty and variety of designs. The women are the weavers, but the smaller basket was made by a man who is one of the few men weavers among the Pomo Indians.

George T. Moore,
Corresponding Secretary